
# Resilience in Deep Space

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Resilience has been a concern in space for decades.

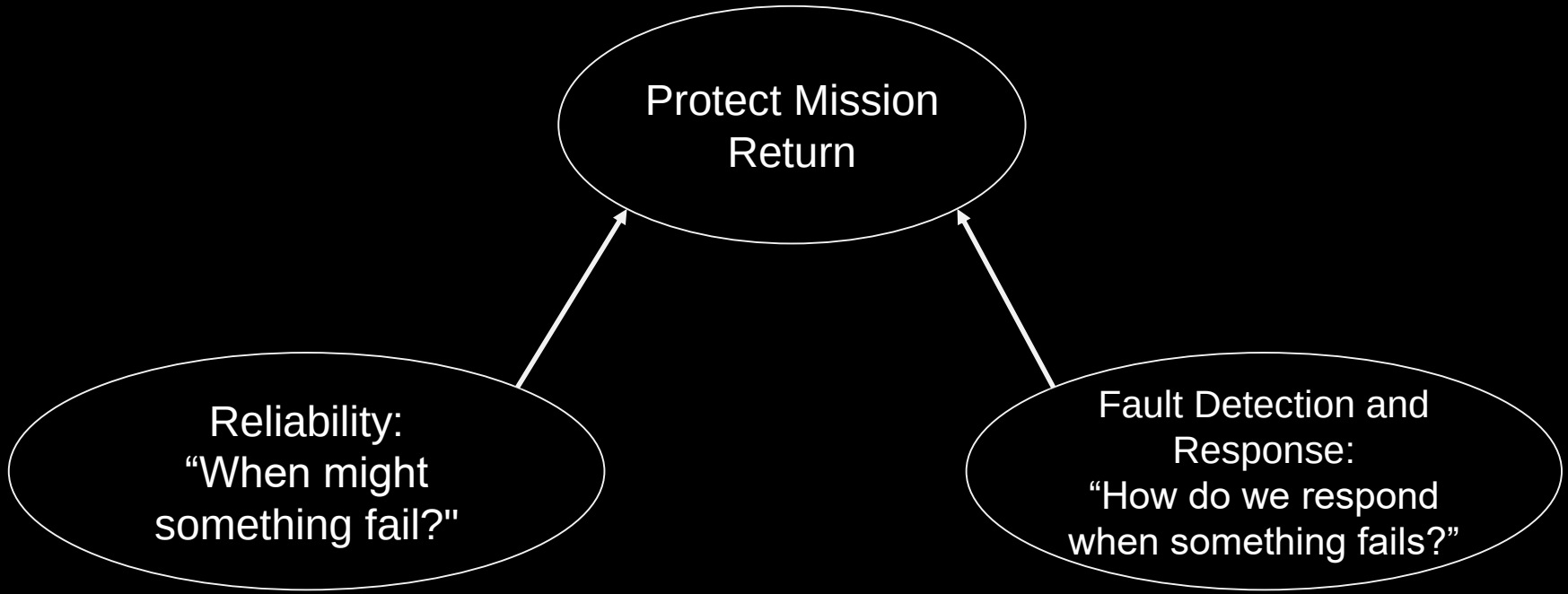
Integrated System Health Management

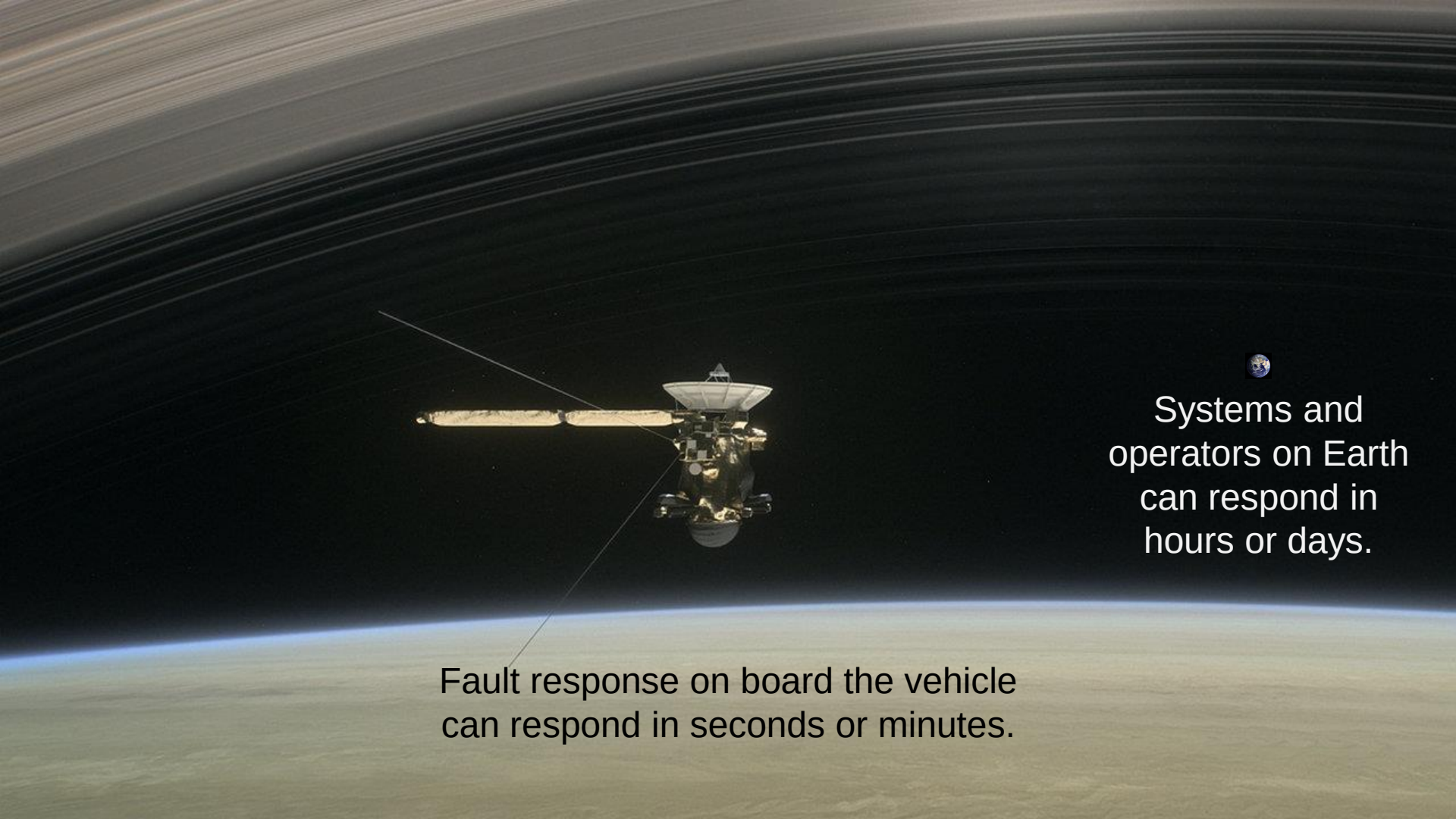
Fault Detection Isolation and Recovery (FDIR)

Fault Protection

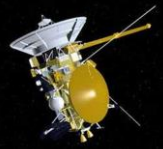
Fault Management

… and lots of other names across the industry.


Protect Mission Return
Reliability: “When might something fail?"
Fault Detection and Response: “How do we respond when something fails?”


Systems and operators on Earth can respond in hours or days.
Fault response on board the vehicle can respond in seconds or minutes.

So, we build extensive Fault Management software into the spacecraft to keep the system safe after a fault.



And we put in place ground-based monitoring systems, tools, and operations processes for reliable ground response.

In the aerospace industry, this problem has been solved in as many different ways as there are organizations in space.

In the last 10 years, some efforts have aimed to create a common language and approach, similar to the Chaos Community.

Further reading for the curious:

NASA Fault Management Handbook (DRAFT),
https://www.nasa.gov/pdf/636372main_NASA-HDBK-1002_Draft.pdf

2012 Fault Management Workshop,
https://www.nasa.gov/offices/oce/documents/2012_fm_workshop.html

Stephen Johnson et al, ”System Health Management with Aerospace Applications”,
http://www.wiley.com/WileyCDA/WileyTitle/productCd-0470741333.html

Kevin Barltrop, ”Fault Management Architecture Assessment”,
https://www.nasa.gov/pdf/638045main_day_2-david_garlan_2.pdf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